

Appl. No. : 09/318,073
Filed : May 25, 1999

AMENDMENTS TO THE CLAIMS

Please cancel Claim 1 without prejudice. Please amend the claims as follows.

1. (Cancelled)

2. (Previously presented) A monolithically formed ferromagnetic thin film memory element comprising:

magnetic storage means having an upper surface and a lower surface;

a word line having an inner surface and an outer surface;

a digital line having an inner surface and an outer surface, the inner surface of said digital line spaced from the inner surface of said word line, with the magnetic storage means positioned therebetween;

first shielding means having a soft magnetic material, said first shielding means positioned above the upper surface of the magnetic storage means and adjacent the outer surface of the word line; and

second shielding means having a soft magnetic material, said second shielding means positioned below the lower surface of the magnetic storage means and adjacent the outer surface of the digital line.

3. (Original) A monolithically formed ferromagnetic thin film memory element according to claim 2, further comprising a first barrier means situated between said first shielding means and the outer surface of said word line.

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4. (Original) A monolithically formed ferromagnetic thin film memory element according to claim 3, further comprising a second barrier means situated between said second shielding means and the outer surface of said digital line.

5. (Previously presented) A monolithically formed ferromagnetic thin film memory element according to claim 3, further comprising a first insulating means situated between said magnetic storage means and the inner surface of said word line.

6. (Previously presented) A monolithically formed ferromagnetic thin film memory element according to claim 5, further comprising a second insulating means situated between said magnetic storage means and the inner surface of said digital line.

7. (Original) A monolithically formed ferromagnetic thin film memory element according to claim 4, wherein the word line has two opposing side surfaces extending between the inner surface and the outer surface thereof, said first shielding means also extending adjacent the two opposing side surfaces of said word line.

8. (Original) A monolithically formed ferromagnetic thin film memory element according to claim 7, wherein said digital line has two opposing side surfaces extending between the inner surface and the outer surface thereof, said second shielding means also extending adjacent the two opposing side surfaces of said digital line.

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9. (Previously presented) A monolithically formed magneto-resistive memory element, comprising:

a word line having an inner surface and an outer surface;

a digital line having an inner surface and an outer surface, the inner surface of said digital line spaced from the inner surface of said word line;

a magnetic bit region between the inner surface of said word line and the inner surface of said digital line;

a first shielding layer having a soft magnetic material, the first shielding layer positioned adjacent the outer surface of the word line; and

a second shielding layer having a soft magnetic material, the second shielding layer positioned adjacent the outer surface of the digital line.

10. (Original) A monolithically formed magneto-resistive memory element according to claim 9, further comprising a first barrier layer between said first shielding layer and the outer surface of said word line.

11. (Original) A monolithically formed magneto-resistive memory element according to claim 10, further comprising a second barrier layer between said second shielding layer and the outer surface of said digital line.

12. (Original) A monolithically formed magneto-resistive memory element according to claim 9, wherein the word line has two opposing side surfaces extending between the inner

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surface and the outer surface thereof, said first shielding layer also extending adjacent the two opposing side surfaces of said word line.

13. (Original) A monolithically formed magneto-resistive memory element according to claim 9, wherein said digital line has two opposing side surfaces extending between the inner surface and the outer surface thereof, said second shielding layer also extending adjacent the two opposing side surfaces of said digital line.

14. (Previously presented) A monolithically formed magneto-resistive memory element according to claim 9, further comprising a first insulating layer between said magnetic bit region and the inner surface of said word line.

15. (Previously presented) A monolithically formed magneto-resistive memory element according to claim 14, further comprising a second insulating layer between said magnetic bit region and the inner surface of said digital line.

16. (Previously presented) A monolithically formed magneto-resistive memory element according to claim 9, wherein the word line is positioned below said magnetic bit region and said digital line is positioned above said magnetic bit region.

17. (Currently amended) A monolithically formed magneto-resistive memory element according to claim 16, further comprising a lower insulating layer positioned below the magnetic ~~field-sensitive~~ bit region, the lower insulating layer having a cavity formed therein, wherein the

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cavity has a bottom surface and two spaced side surfaces, the first shielding layer having an inner surface and an outer surface, wherein the outer surface of the first shielding layer is adjacent the back surface of the cavity, and the outer surface of said word line is positioned adjacent the inner surface of the first shielding layer.

18. (Original) A monolithically formed magneto-resistive memory element according to claim 17, further comprising a first barrier layer between said first shielding layer and the outer surface of said word line.

19. (Original) A monolithically formed magneto-resistive memory element according to claim 18, wherein the inner surface of the word line substantially lies in the plane formed by the upper surface of the lower insulating layer.

20. (Previously presented) A monolithically formed magneto-resistive memory element according to claim 19, further comprising a first insulating layer between the inner surface of the word line and the magnetic bit region.

21. (Previously presented) A monolithically formed magneto-resistive memory element according to claim 20, further comprising a second insulating layer between the inner surface of the digital line and the magnetic bit region.

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22. (Original) A monolithically formed magneto-resistive memory element according to claim 21, further comprising a second barrier layer between said second shielding layer and the outer surface of said digital line.

Claims 23-34 (Cancelled).